

HUAWEI IdeaHub S2
2.1

Product Overview

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1 Product Highlights

Built on the next-gen hardware platform with high-computing power and HarmonyOS, HUAWEI IdeaHub S2 series (IdeaHub or endpoint for short) provides all-scenario intelligent conferencing, Bring Your Own Meeting (BYOM), and an ecosystem with extensive apps. It is a perfect solution for boundless collaboration and remote conferencing to fit in any room, such as the regular meeting room, executive office, and open office area.

- Bring Your Own Meeting (BYOM) with seamless transfer from personal devices to HUAWEI IdeaHub S2.
- One-step projection using Wi-Fi Direct without the need for devices to share the same local area networka (LAN).
- Multi-Window and App Multiplier deliver an enriched office ecosystem.
- A dedicated video conferencing camera and dual HD hardware codec combine to deliver low-noise, true-to-life images with consistent resolution all of the time.
- HarmonyOS and distributed smart office, delivering more friendly and convenient collaboration and interaction experience.
- Annotate on full screen in full color with an all-new toolbar. Writing is effortlessly smooth with intelligent recognition and ultra-low latency.
- Chip-device-pipe-cloud full-link protection and passed CC EAL5+ high-level security certification for global commercial systems.

Table 1-1 lists endpoint models.

Table 1-1 Models

Product	IdeaHub S2
Model (Outside the Chinese Mainland)	<ul style="list-style-type: none">• IHS2-65SA• IHS2-75SA• IHS2-86SA

2 Platform Access

2.1 Networking

SMC2.0

The IdeaHub can be connected to the SMC2.0 platform. Based on the CloudVC network, the IdeaHub meets users' requirements for video communication and centralized O&M management.

Users can manage various functions of the endpoints on the platform, including sites, meetings, configuration delivery, and automatic device inspection.

SMC

The IdeaHub can be connected to the SMC platform. Based on the CloudVC network, the IdeaHub meets users' requirements for video communication and centralized O&M management.

Users can manage various functions of the endpoints on the platform, including meetings, configuration delivery, certificates, web apps, and the bulletin board.

Huawei Cloud Meeting

Based on a public cloud architecture, Huawei Cloud Meeting provide users with HD audiovisual conferencing and efficient collaboration.

Users can manage various functions of the endpoints on the platform, including configuration delivery, certificates, web apps, and the bulletin board.

IdeaManager

The IdeaManager is an integrated endpoint management solution for enterprises and provides P2P endpoint management and O&M capabilities. It meets endpoint management and O&M requirements in scenarios where a large number of endpoints are connected. The IdeaManager helps customers improve O&M efficiency and reduce O&M costs. By deployment mode, the IdeaManager can be classified into IdeaManager (cloud service) and IdeaManager (on-premises).

2.2 Capability Comparison

Meeting Quality

Table 2-1 Meeting quality on each platform

Platform	Capability Description
SMC2.0, SMC	<ul style="list-style-type: none"> After the on-premises meeting license is imported to the IdeaHub S2, it supports the on-premises meeting function. The meeting dual-stream capability can reach 1080p 30 fps for video and 1080p 30 fps/4K 8 fps for presentation. Supports multiple meeting control operations. Supports the following layouts: full screen, Picture-in-Picture (PiP), and Picture-out-Picture (PoP). Supports one-click SiteCall to initiate a meeting, initiate a multipoint meeting, or initiate a point-to-point meeting. <p>NOTE On-premises capabilities supported by large screens vary with the large screen model. For details, see the Product Documentation > FAQs > FAQs > Activation > What On-Premises Capabilities Can Be Activated on Large Screens?. You can obtain the product documentation from Huawei technical support website.</p>
Huawei Cloud Meeting	<ul style="list-style-type: none"> Supports HD video meetings with a resolution of up to 1080p. Supports multiple meeting control operations. Supports the following meeting layouts: presenter view, PiP view, and gallery view. Allows users to join a meeting from the meeting schedule by one click. Supports one-click SiteCall to initiate a meeting, initiate a multipoint meeting, or initiate a point-to-point meeting.
IdeaManager	N/A

Client Capabilities

Table 2-2 Client capabilities supported by each platform

Platform	Meeting Scenario	Whiteboard Scenario	Projection Scenario
SMC2.0, SMC	The mobile phone client is not involved.	You can use a browser to scan the QR code to transfer the whiteboard content.	You can use the IdeaShare client for projection.
Huawei Cloud Meeting	You can join a meeting by scanning the QR code using the Huawei Cloud Meeting client.	<ul style="list-style-type: none"> You can use a browser to scan the QR code to transfer the whiteboard content. 	<ul style="list-style-type: none"> You can use the IdeaShare client for projection. You can use the Huawei Cloud

Platform	Meeting Scenario	Whiteboard Scenario	Projection Scenario
		<ul style="list-style-type: none"> You can scan the QR code using the Huawei Cloud Meeting client or WeChat to transfer the whiteboard content. 	Meeting client for projection.
IdeaManager	The mobile phone client is not involved.	<ul style="list-style-type: none"> You can use a browser to scan the QR code to transfer the whiteboard content. IdeaManager (cloud service): You can scan the QR code using WeChat to transfer the whiteboard content. 	You can use the IdeaShare client for projection.

Access Modes

Table 2-3 Platform access modes

Platform	Access Mode
SMC2.0	You can connect to the platform by adding manageable participants or predefined participants.
SMC	You can manually enter the activation code to access the platform.
Huawei Cloud Meeting	You can manually enter the activation code or scan the QR code to access the platform.
IdeaManager	<ul style="list-style-type: none"> IdeaManager (cloud service): You can manually enter the access code or scan the QR code to access the platform. IdeaManager (on-premises): You can manually enter the access code.

3 Product Structure

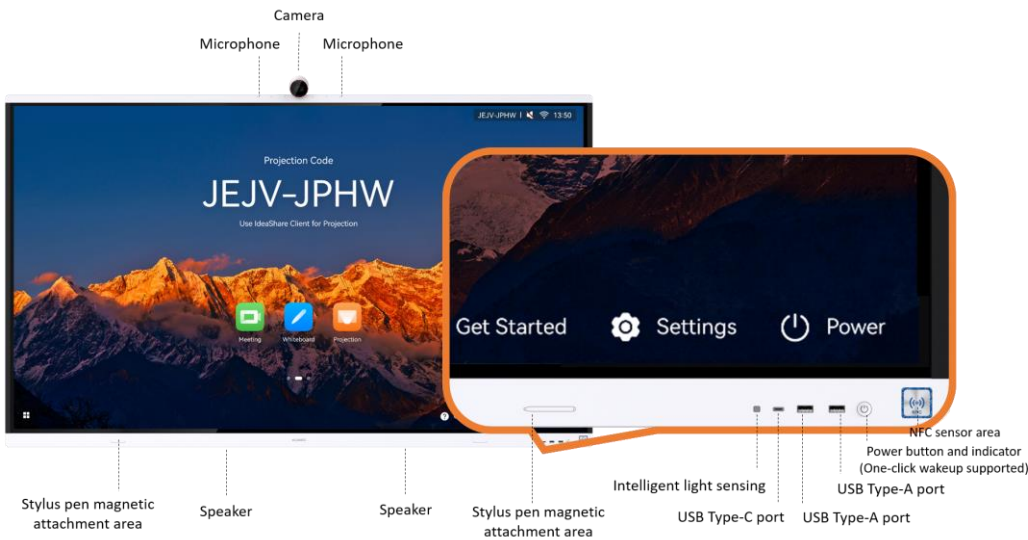
3.1 Appearance

Front View

Figure 3-1 Front view of the endpoint



Figure 3-2 Modules in the front view of the endpoint



Rear View

Figure 3-3 Rear view of the 65-inch endpoint

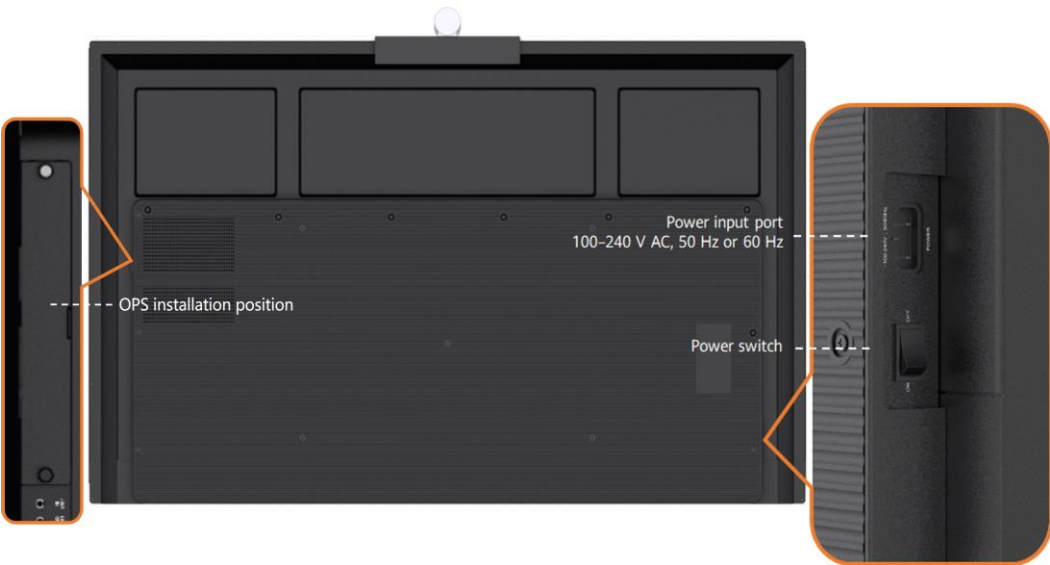


Figure 3-4 Rear view of the 75-inch endpoint

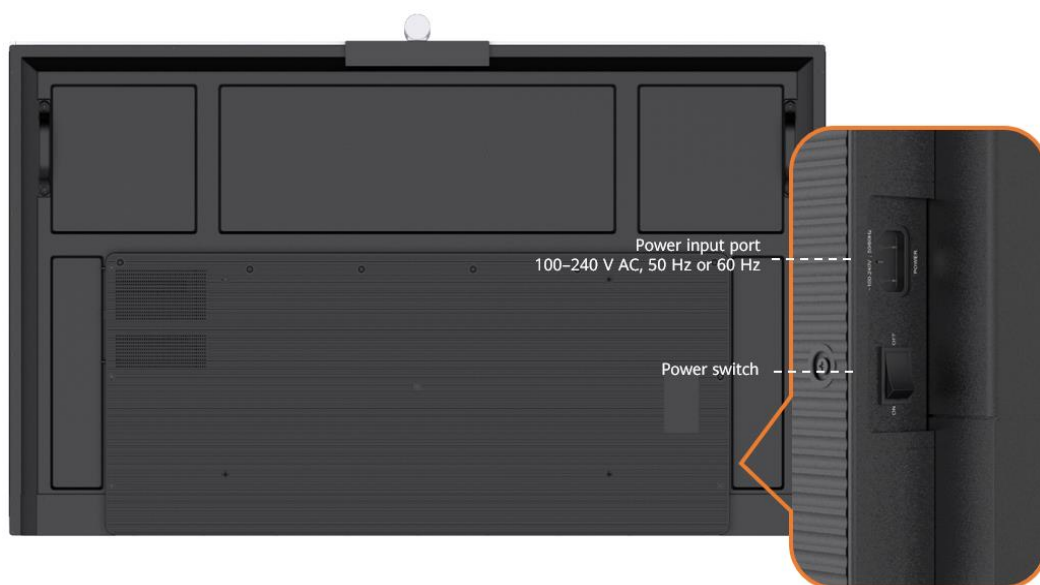
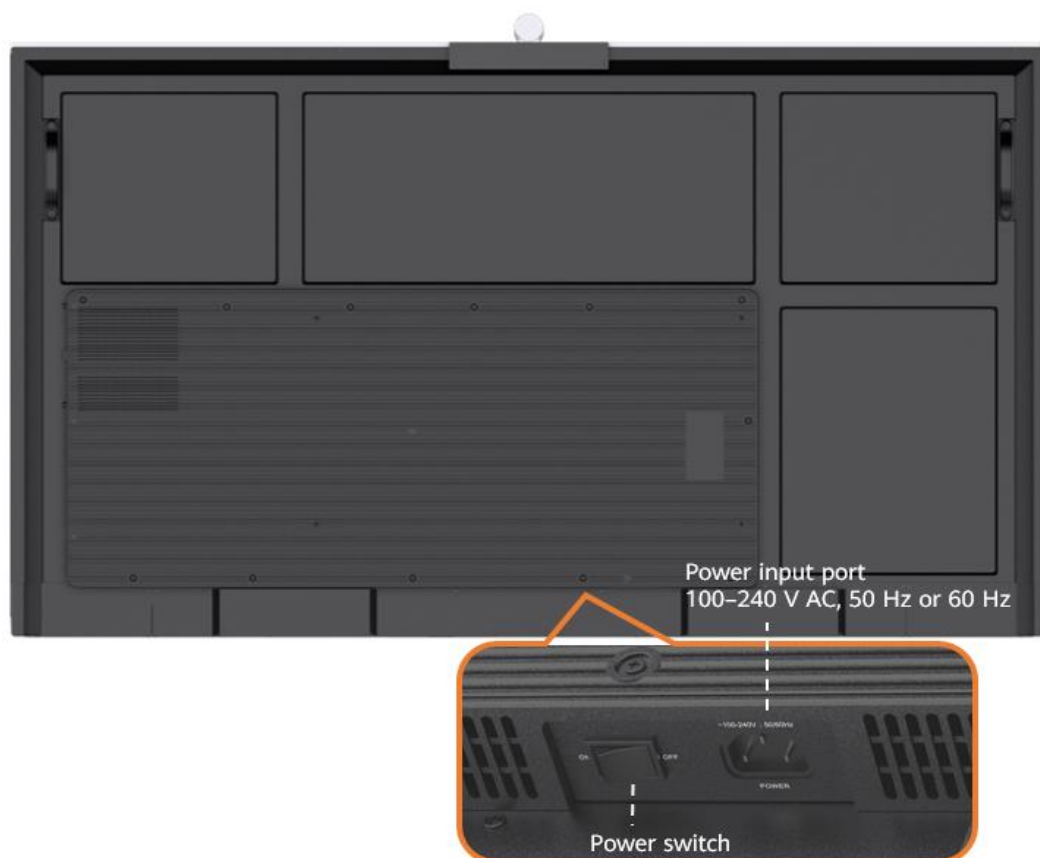


Figure 3-5 Rear view of the 86-inch endpoint



3.2 Ports and Functional Modules

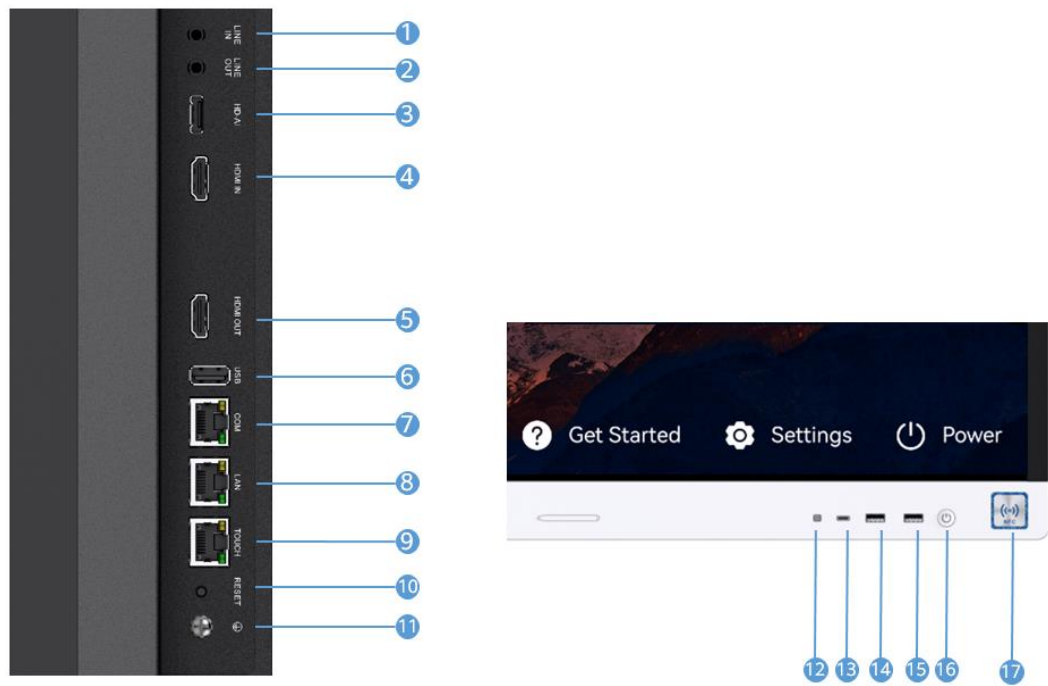


Table 3-1 Port description

Category	No.	Port Description	Function
Audio input port	1	3.5 mm audio input port	Connects to an audio input source such as a computer.
Audio output port	2	3.5 mm audio output port	Connects to an audio output device, such as an external speaker.
Audio input port	3	HD-AI audio input port	Connects to a microphone array (VPM220 or Mic 500).
Video input port	4	HDMI video input port	Connects to an HDMI input source.
Video output port	5	HDMI video output port	Connects to the second display to display the video of the site.
USB port	6	USB Type-A port	Connects to a USB device (applicable when no OPS is installed), such as an IdeaShare Key (Type-A), USB flash drive, keyboard, or mouse.
Other ports	7	COM port	Connects to a network port connector to define RS232/RS422 interface signals.
	8	Ethernet port (10/100/1000 Mbit/s, full-duplex and	Used for external services.

Category	No.	Port Description	Function
		half-duplex supported)	
	9	TOUCH port	Connects the endpoint to the Touch.
Buttons	10	RESET button	<ul style="list-style-type: none"> During startup, press and hold this button for 3 to 5 seconds to enter eRecovery mode. When the endpoint is running, press and hold the button for 13s to reset it to factory settings.
Other ports	11	Ground point	Connects to the ground cable to provide ground protection for the endpoint.
Functiona l module	12	Intelligent light sensing	Intelligently adjusts the screen brightness based on the ambient light illuminance.
USB port	13	USB Type-C port	<ul style="list-style-type: none"> Connects to a computer or a mobile device for projection sharing or reversely controls the computer or mobile device during projection sharing. Connects to an IdeaShare Key (Type-C) for pairing or upgrade.
	14	USB Type-A port	Connects to a USB device, such as an IdeaShare Key (Type-A), USB flash drive, Controller receiver, keyboard, or mouse.
	15	USB Type-A port	Connects to a USB device, such as an IdeaShare Key (Type-A), USB flash drive, Controller receiver, keyboard, or mouse.
Buttons	16	Power button and indicator	<ul style="list-style-type: none"> You can put the endpoint into sleep mode or wake it up by pressing the power button. You can power on the endpoint after soft shutdown by pressing the power button. The indicator indicates the endpoint running status.
Functiona l module	17	NFC sensor area	Used for pairing your endpoint with your phone in the NFC OneHop projection scenario.

3.3 Indicators

By checking the indicator status, you can learn about the running status of the endpoint in a timely manner and ensure the normal running of it and its peripheral devices. Table 3-2 describes the indicator status.

Table 3-2 Indicator status

Indicator status	Endpoint Status
Off	Powered off
Blinking green twice per second	Powering on
Blinking green four times per second	Upgrading
Steady green	Working properly
Breathing green (gradually lighting, then dimming)	Sleep
Blinking red once every 5s	Faulty hardware
Blinking red twice every 5s	Overheated
Blinking red once per second	Touchscreen abnormal
Blinking red twice per second	IP address conflict
Blinking red four times per second	Faulty software

3.4 Touch

The Touch, an optional 10.1-inch touch panel, can be used to operate the IdeaHub. The Touch provides a user-friendly user interface (UI) from which you can easily access various meeting functions in several taps.

Figure 3-6 Front and rear appearances of the Touch



NOTE

The Touch delivered with the endpoints may be of different models, which have the same functions. The only difference lies in the position of the power button (on the left or right frame of the screen). One of the models is randomly delivered and the actual product may vary.

Table 3-3 Component description

No.	Component	Function
1	Power button	Press to lock or wake up the Touch. Press and hold to turn the Touch on or off.
2	Type-C port	Connects to a power adapter using a Type-C cable to power the Touch. Prepare the Type-C cable and HW-050200C02 power adapter separately.
3	PoE port	<ul style="list-style-type: none">Connects to the PoE port on the PoE adapter using the Touch network cable. The Touch is powered through the PoE adapter and connects to the IdeaHub through Wi-Fi.Connects to the PoE port on the PoE adapter using the Touch network cable. The Touch is powered through the PoE adapter. The DATA port on the PoE adapter connects to the network where the IdeaHub is located.
4	Kensington security slot	Connects to a Kensington lock to secure the Touch. The Kensington lock should be prepared separately.

To learn more, see the *Touch Quick Start Guide* delivered with the Touch.

3.5 Controller

You can configure the Controller and Controller receiver for the endpoint. The Controller can be used to perform routine operations on multiple types of endpoints and provide convenient control functions.

Figure 3-7 Controller and receiver

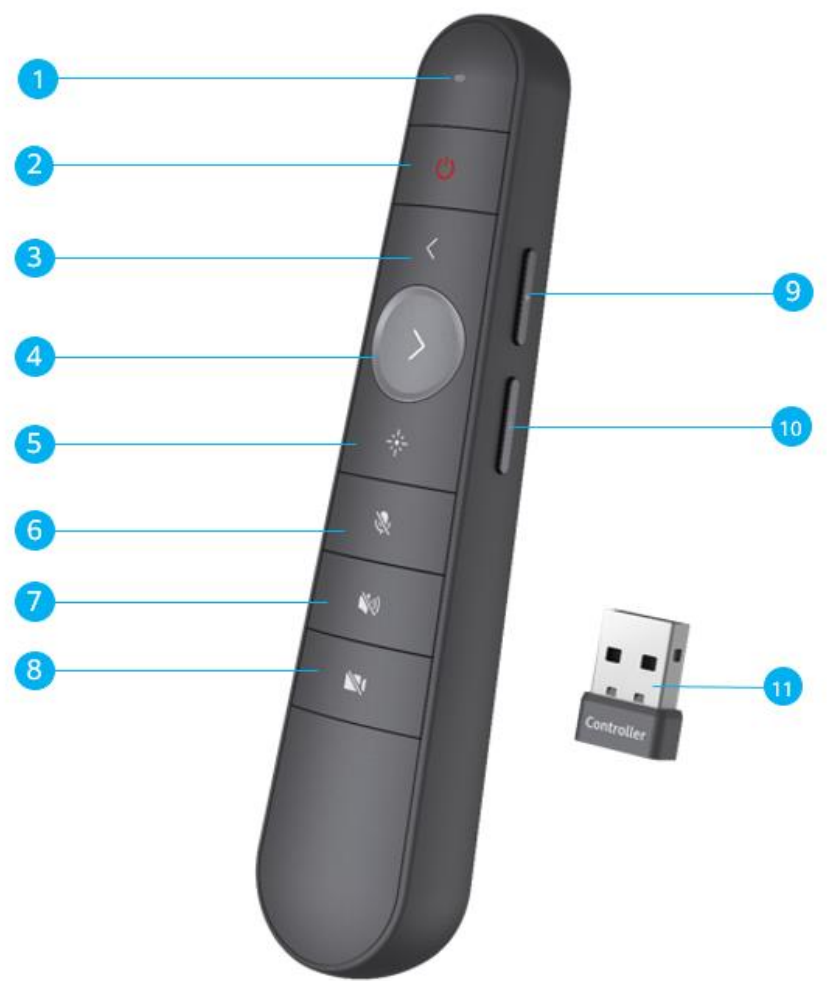


Table 3-4 Functions of the Controller and receiver

No.	Function and Name	Description
1	Indicator	Displays the working status of the Controller.
2	Sleep/Wake up	After you press this button, the endpoint enters or wakes up from the sleep mode.
3	Turn to the previous page	Go back to the previous page on the whiteboard and in presentations and documents.
4	Turn to the next page	Turn to the next page on the whiteboard and in presentations and documents.
5	Laser pointer	Press and hold the button to move the laser pointer icon, and press the button to perform the tap operation.

No.	Function and Name	Description
6	Mute/Unmute the microphone	Press the button to mute or unmute the microphone.
7	Mute/Unmute the speaker	Press the button to mute or unmute the speaker.
8	Enable/Disable the camera	Press the button to turn on or off the camera.
9	Increase the volume	Press or hold the button to increase the volume.
10	Decrease the volume	Press or hold the button to decrease the volume.
11	Controller receiver	Insert the Controller receiver into the USB Type-A port at the lower right corner of the front screen to receive signals from the Controller.

3.6 OPS

The Open Pluggable Specification (OPS) is optional for endpoints. After an OPS is configured, endpoints can run the Windows operating system based on the OPS to install and run third-party software.

When third-party meeting software is used to hold a meeting in the OPS scenario, the microphone, speaker, and camera of the IdeaHub can be used. In addition, AI functions such as intelligent tracking and voice tracking are supported.

NOTE

Functions of different third-party meeting apps may vary in the OPS scenario.

Appearance

Table 3-5 Main appearance differences of OPSs

OPS Name	Main Modules on the Front Panel	Appearance
<ul style="list-style-type: none">ICD OPS i5 DICD OPS i7 D	Ports: <ul style="list-style-type: none">1 x RJ45 network port1 x DP display port1 x HDMI display port1 x LINE IN microphone jack1 x LINE OUT audio output port2 x Wi-Fi antenna port3 x USB 2.0 Type-A port	Figure 3-8

OPS Name	Main Modules on the Front Panel	Appearance
	<ul style="list-style-type: none">3 x USB 3.0 Type-A port Buttons: <ul style="list-style-type: none">1 x Power button1 x One-click restoration button Indicators: <ul style="list-style-type: none">1 x Power-on indicator (green)1 x Power indicator (red)1 x Hard disk indicator (yellow)	

Figure 3-8 OPS appearance



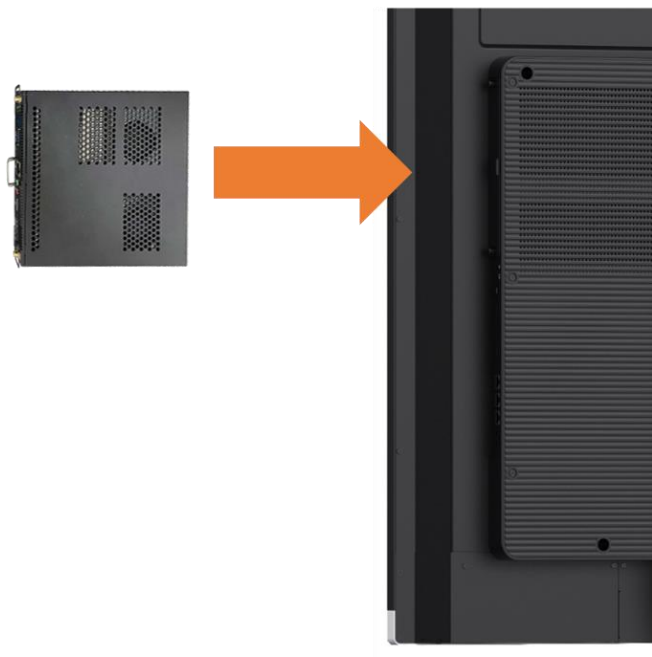
Installation Position

As an embedded computer module, the OPS can be easily installed or removed simply using a screwdriver.

NOTE

- Endpoints of different sizes differ slightly in appearance, but their installation methods are similar. The following uses one endpoint as an example.
- When installing or removing an OPS, ensure that the endpoint is powered off. Otherwise, the OPS may be abnormal.

Figure 3-9 OPS installation position

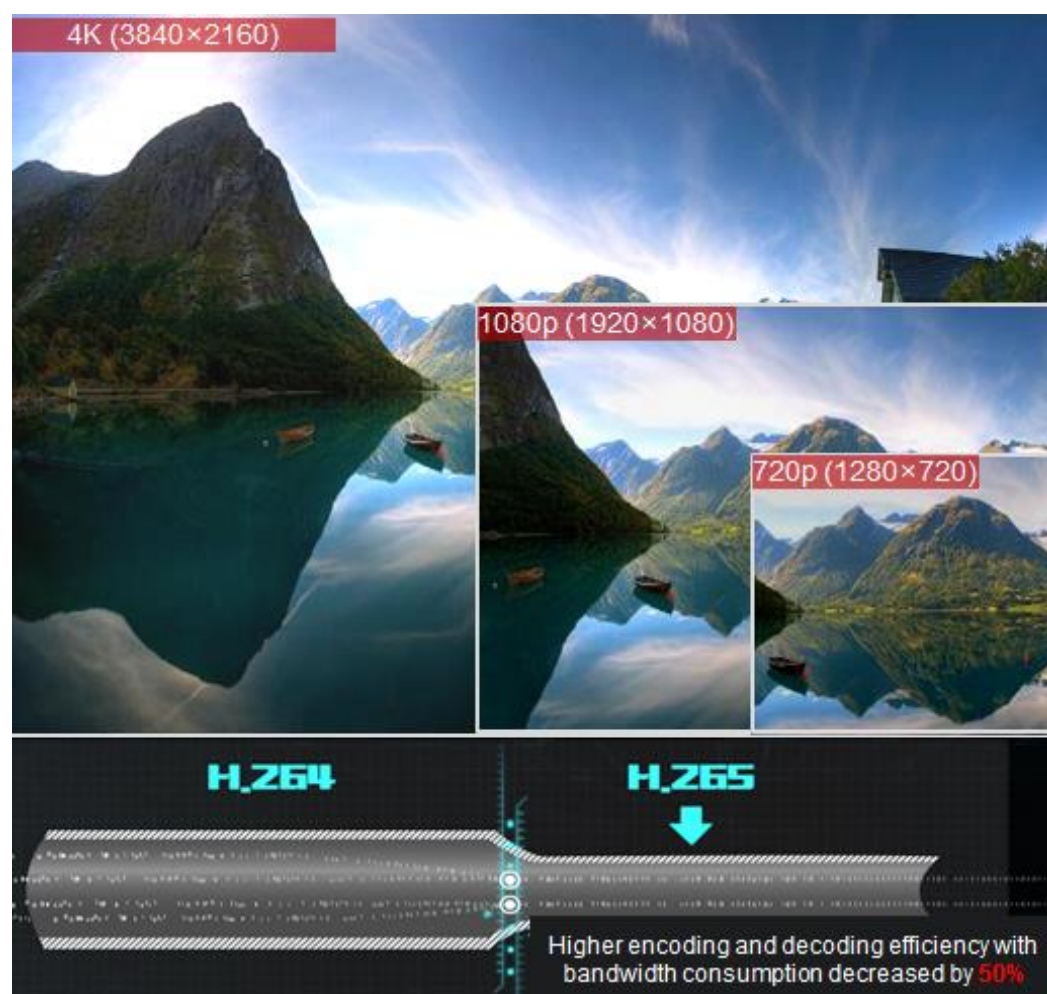


4 Functions and Features

4.1 Ultra-HD Display Resolution

The IdeaHub supports a resolution of 4K 60 fps. 4K delivers four times the resolution of 1080p screens, giving incredible clarity and lifelike detail to images on a larger screen.

Figure 4-1 H.265 4K ultra-HD video



4.2 Hi-Fi Audio

- Supports Acoustic Echo Cancellation (AEC), Automatic Noise Suppression (ANS), and Automatic Gain Control (AGC), as well as VoiceClear, AudioEnhancer, reverberation suppression, and lip synchronization.
- Supports Opus, Forward Error Correction (FEC), Backward Error Correction (BEC), Packet Loss Concealment (PLC), Net Automatic Transfer-Enhancement (netATE), and Audio Jitter Buffer (AJB).
- Leverages the built-in microphone for the clear, crisp audio, and supports an external microphone for extending pickup distance.
- Based on the installation mode of the large screen, you can select the corresponding configuration item on the touchscreen or web interface. For example, you can select **Standard** (floor stand-mounted), **Wall-mounted**, or **Wall-recessed** to achieve better audio and video effects.

4.3 All-Scenario Intelligent Meetings

Video Meetings

By using the video conferencing capability provided by the CloudVC network, the IdeaHub works with a 4K professional-grade camera, and supports H.323+SIP dual stack and dual 1080P 30 fps hardware encoding and decoding capabilities. The IdeaHub supports up to 1080P 30 fps HD video and 1080P 30 fps HD data sharing, delivering clear details in frames.

NOTE

- The IdeaHub S2 supports the on-premises meeting function after the on-premises meeting license is imported.
- On-premises capabilities supported by large screens vary with the large screen model. For details, see the **Product Documentation > FAQs > FAQs > Activation > What On-Premises Capabilities Can Be Activated on Large Screens?**. You can obtain the product documentation from Huawei technical support website.

Adapting to Cloud Meetings

The IdeaHub adapts to the Huawei Cloud Meeting SmartRooms, Tencent Meeting Rooms, and Lark Meetings. Cloud meetings support HD video meetings with a resolution of up to 1080p.

BYOM

The IdeaHub can be connected to mobile devices or computers. After the connection, the camera, microphone, speaker, and screen of the IdeaHub can be used by the mobile devices or computers.

Participants can enjoy a wide field of view and long-distance sound pickup in professional meeting rooms. More participants at the local site can participate in efficient discussions; the video and audio played at the remote site is clear.

4.4 Smart Projection

The IdeaHub supports wired and wireless projection modes. Both modes provide basically the same functions. You can use either of the two modes based on your needs to easily share audio files, videos, images, and other files on your mobile device or PC. In addition, the IdeaHub supports reverse control and annotation, making projection and information interaction simple and efficient.

Wired Projection

The IdeaHub can be connected to a computer using an HDMI cable or USB Type-C cable to share the computer desktop. The IdeaHub supports plug-and-share. After performing wired projection using a Type-C cable, the computer can directly use the built-in camera, microphone, and speaker of the IdeaHub. In addition, the IdeaHub allows mobile devices to perform projection using a USB Type-C cable.

Client Wireless Projection

Wireless projection frees you from complex cable connections and allows you to easily share your computer and mobile device desktops.

- With Huawei Cloud Meeting and IdeaShare mobile clients, you can share your mobile device screen.
- With Huawei Cloud Meeting and IdeaShare Windows/macOS PC clients, you can share your PC desktop.
- With the IdeaShare Android/HarmonyOS/Windows client, the Wi-Fi P2P connection mode is supported. Projection can be started even if the mobile device and IdeaHub are not on the same network.
- With the IdeaShare Windows client (supporting BYOM), the camera, microphone, and speaker of the IdeaHub can be used as virtual peripherals for third-party meeting software installed on computers.

IdeaShare Key Projection

After simple pairing, users can share the computer desktop to the IdeaHub through the IdeaShare Key.

Figure 4-2 IdeaShare Key (Type-A)



Figure 4-3 IdeaShare Key (Type-C)



DLNA Projection

If a third-party audio or video app supports DLNA-based projection, you can project images, music, or videos to the IdeaHub via this app.

Cast+ Wireless Projection

You can use the wireless projection function from the drop-down menu on your Huawei phone to quickly project your phone screen to the IdeaHub, without the need to connect cables.

NFC OneHop Projection

Enable NFC on your Huawei phone, and place your phone close to the NFC sensor area of the IdeaHub to trigger pairing. Then you can project your phone screen to the IdeaHub.

Reverse Control

The IdeaHub allows you to reversely control the computer desktop from the touchscreen by performing tap, drag, and double-tap operations on the touchscreen. When a PowerPoint presentation is in slide show mode on the computer, you can change slides or end the show using the touchscreen.

4.5 Whiteboard Collaboration

The IdeaHub's built-in whiteboard features ultra-low writing latency and smooth writing. The whiteboard provides multiple writing modes and mistouch prevention to meet the requirements of daily office and education writing scenarios. Whiteboard content can be easily saved and transferred through multiple methods. Users can choose a method as they like.

Table 4-1 Whiteboard collaboration functions

Function	Description
Creating a whiteboard	Create a maximum of 100 whiteboard pages and set their background color to white, gray, or dark green.
Writing on a whiteboard	<ul style="list-style-type: none"> • Write with your finger or a stylus pen. • Support a handwriting effect for a fountain pen. • Support two persons writing at the same time. • Support intelligent writing recognition of shapes and texts. • Select, move, zoom in, zoom out, delete, and edit shapes and texts, or cancel the preceding operations. • Support writing in the highlighter effect. • Support adjustment of line thickness for handwriting (in fountain pen, pencil, and highlighter effects). • Insert shapes such as triangles, quadrilaterals, and circles. • Insert images.
Operating a whiteboard	<ul style="list-style-type: none"> • Perform operations such as zooming in, zooming out, erasing, and dragging the canvas by using your finger. • Circle an area. You can move, zoom in/out, or delete the content or change the color in the circled area. • Support precise erasing and full screen clearing.
Saving a whiteboard	<ul style="list-style-type: none"> • Save the whiteboard to a local directory. • Save the whiteboard to a USB flash drive. • Transfer the whiteboard content via emails on condition that email accounts have been configured. • Scan the QR code with the Huawei Cloud Meeting client to save the whiteboard content. • Save whiteboard content to a configured third-party server by scanning the QR code. • Save content by scanning the QR code through the browser.
Closing a whiteboard	Before closing a whiteboard, you can choose whether to save the whiteboard content.
Deleting a whiteboard	Delete whiteboard pages or files.
Opening a whiteboard	<ul style="list-style-type: none"> • Open a whiteboard from a local directory. • Open a whiteboard in a USB flash drive. • Scan the QR code with the Huawei Cloud Meeting client to open the whiteboard.
Sharing a whiteboard	Support whiteboard sharing during meetings.
Annotation	<ul style="list-style-type: none"> • Annotate on local apps. • Allow annotations to be projected.

Function	Description
	<ul style="list-style-type: none">• Support global annotation.• Save annotations to a local directory of the endpoint.• Open annotation files from a local directory of the endpoint.• Send annotated content via email.• Share annotations in a meeting.• Add content on one split screen to the other, that is the whiteboard, as an image using the annotation function in split-screen mode.

4.6 Intelligent Tracking

Auto-Framing

With the panoramic photography, the endpoint automatically adjusts its camera based on the number and position of attendees, in order to ensure the optimal panoramic view.

Figure 4-4 Auto-Framing



NOTE

Only the built-in camera supports Auto-Framing.

Voice Tracking

The IdeaHub uses voice tracking and face detection algorithms to detect and locate the sound source. Using this information, it automatically displays a close-up image of the speaker.

Voice tracking is applicable to two-person conversations. When two persons speak in turn (such as A-B-A mode), the large screen will trigger a conversation mode and display the speakers in one or two panes based on their distance.

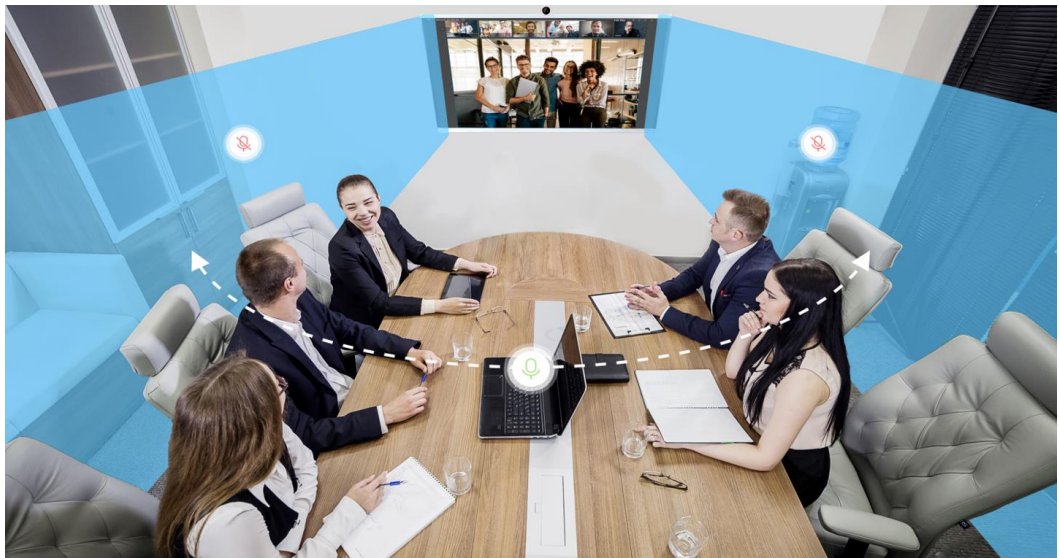
 **NOTE**

Only the built-in camera and microphone support voice tracking.

4.7 Acoustic Baffle

When the acoustic baffle function is enabled on the IdeaHub during a meeting, noise outside the invisible sound wall at the local site can be effectively reduced to prevent impact on remote sites.

Figure 4-5 Acoustic baffle



4.8 Dual-Screen Display

The IdeaHub supports dual-screen extension or clone. You can connect an IdeaHub to an external display using an HDMI cable to display content such as the video and presentation separately on two screens or clone the content on the IdeaHub to another display.

4.9 App Multiplier

App Multiplier lets you have the same app open in two different windows on one large screen, improving visual perception and user experience. The system automatically selects an appropriate display mode based on the application type. The modes are as follows:

- **Navigation mode:** You can open the app in two windows, with the left one displaying the app homepage and the right one displaying the newly opened page.
- **Shopping mode:** You can open the app in two windows, with both displaying the latest two pages, which is perfect for a multi-hierarchy app.

- Single window mode: You can open the app in one window which will be displayed in the center of the screen when you are using the app. This is a minimum guarantee for apps that do not support landscape display.
- EasyGo mode: Third-party app developers can customize the window display mode based on service scenarios.

4.10 Multi-Window

The IdeaHub allows you to open two apps at the same time in split-screen mode, reducing complex operations caused by app switching and improving usage efficiency. You can also adjust the split-screen ratio of app windows for proper display areas.

4.11 Address Book

After the on-premises meeting function is enabled on an endpoint, the endpoint can use the local address book or LDAP server-based corporate directory to store site information.

- On the touchscreen or web interface, you can edit or delete a site from the local address book.
- On the touchscreen, Touch UI, or web interface, you can query sites in the local address book and corporate directory, initiate calls to these sites, or invite other sites to join a meeting.

4.12 Wireless Connections

The endpoint supports 2 x 2 Wi-Fi technology (that is, 2-channel input and 2-channel output of Wi-Fi data), dual antennas, and dual bands (2.4 GHz and 5 GHz). Both Wi-Fi and hotspot can be enabled at the same time.

If Wi-Fi is enabled, the endpoint automatically detects and connects to Wi-Fi networks. You can set the IP address in DHCP or static mode. This function applies to scenarios in which no wired network is available and you need to connect the endpoint to the network via Wi-Fi.

When the IdeaHub has its hotspot enabled, it can serve as a hotspot for connecting other devices (such as a PC) to Wi-Fi.

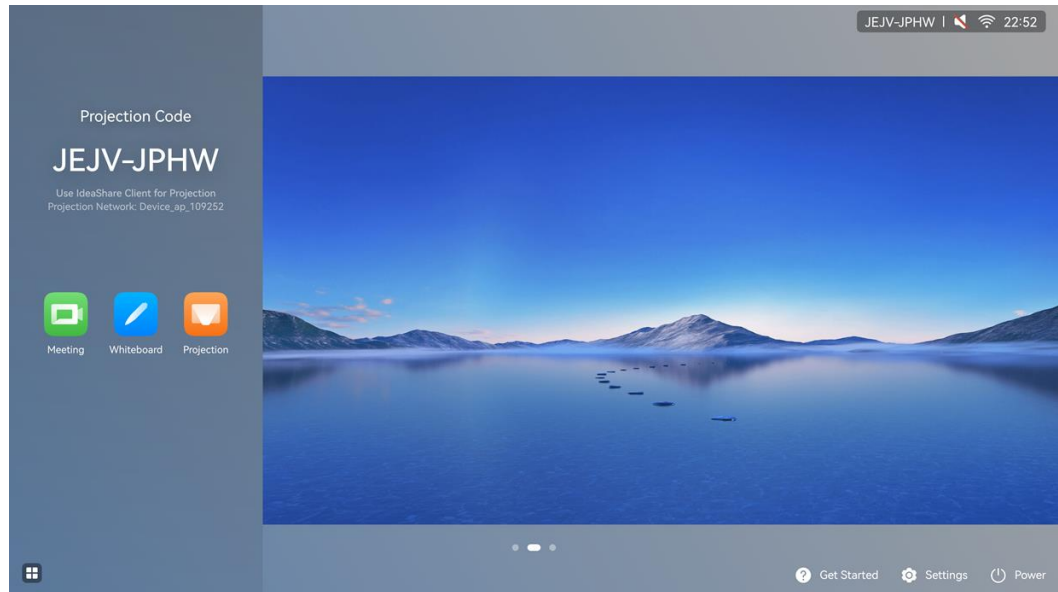
NOTE

This device contains the radio transmission module with the type approval code **CMIT ID:2022AP2900**.

4.13 Bulletin Board

The IdeaHub supports releasing various types of information on the home screen, including corporate culture, team objectives, administrative services, and welcome speeches. Content can be managed by level and can be flexibly defined based on application scenarios.

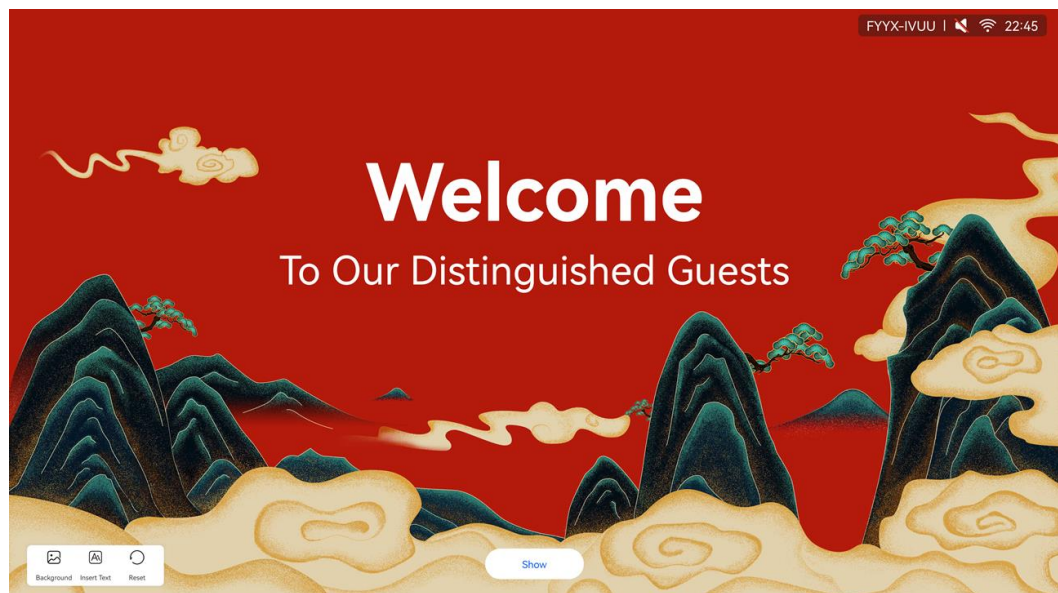
Figure 4-6 Bulletin Board



4.14 HiBoard Welcome Page

The IdeaHub supports the HiBoard welcome page. Three welcome page background images are available by default and users can customize the content and font of the welcome page. You can also upload customized welcome page background images.

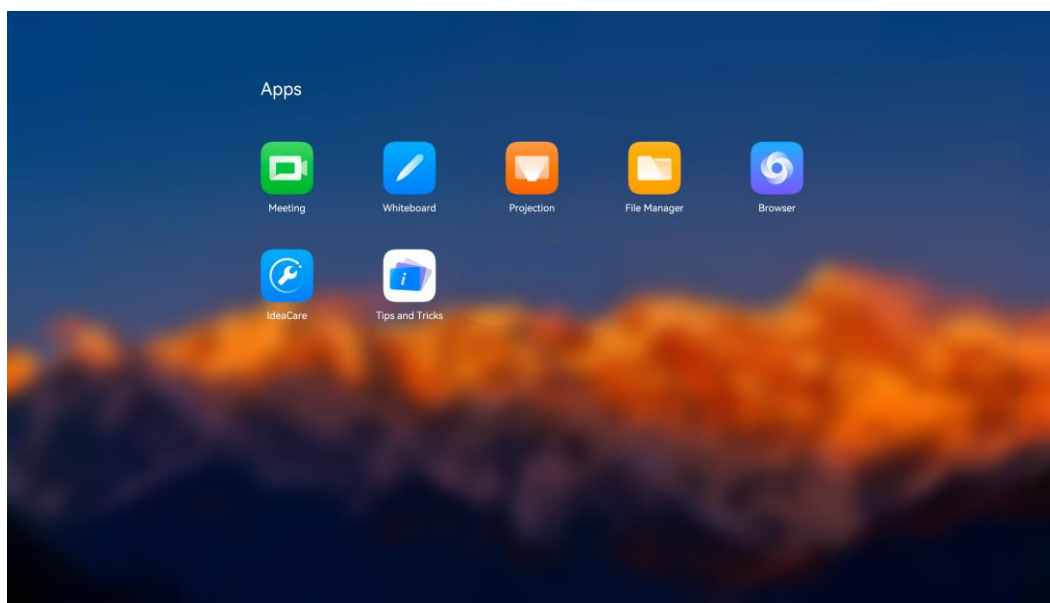
Figure 4-7 HiBoard



4.15 Apps

The IdeaHub has common enterprise apps pre-installed, covering various office scenarios such as meeting, whiteboard, and projection, satisfying users' requirements for digital office. You can customize the apps on the home screen based on use frequency, in a simple and efficient manner.

Figure 4-8 Apps



4.16 Globalization

The IdeaHub supports multiple languages and time zone settings. If some countries and regions in the selected time zone use daylight saving time (DST), the IdeaHub automatically enables DST and changes its clock to comply with DST, meeting needs of different users.

The IdeaHub supports the following languages: Simplified Chinese, English, Spanish, French, Russian, Japanese, Arabic, Italian, Portuguese (Brazil), and German.

NOTE

- Only the endpoint touchscreen supports German.
- Only the endpoint touchscreen and Touch interface support Arabic.
- Portuguese (Brazil) is supported only after the Portuguese license is imported.

4.17 Operations, Administration, and Maintenance

4.17.1 Batch Configuration

The IdeaHub can be connected to enterprise services, and deliver configurations through the management platform (IdeaManager or SMC) to complete key configurations in batches, improving O&M efficiency.

4.17.2 Customizing a Startup Animation and Changing a Wallpaper

- The startup animation can be replaced with a customized animation to meet personalized requirements.
- You can change the wallpaper on the web interface, touchscreen, or Touch.

4.18 APIs for Third-Party Integration

The IdeaHub provides APIs for third-party integration and development based on HTTP (Hypertext Transfer Protocol). Users can choose necessary APIs based on their actual needs to develop required functions and integrate functions of the IdeaHub into other products or apps.

4.19 Keeping Applications Alive in the Background

The IdeaHub allows users to select applications that need to be kept alive in the background to prevent them from being automatically closed by the system.

4.20 Developer Options

Developer options provide users with in-depth optimization functions. It is recommended that users disable developer options immediately after using them. Developer options of the IdeaHub include:

- **USB Debugging:** When enabled, you can debug the IdeaHub, copy data, and install apps on it using the computer connected to the IdeaHub through a USB port.
- **Revoking USB Debugging Permission:** Revoke the previously granted USB debugging permissions from all the computers. After the permissions are revoked, the current USB debugging stops.
- **Auto System Update:** When enabled, auto update of forcible update packages in **System & Update** is allowed.

5 Security and Reliability

5.1 Operating System Security

Security maintenance for the system layer ensures that the operating system runs smoothly and also supports stable services at the application layer. The IdeaHub uses HarmonyOS and provides powerful anti-attack capabilities.

5.2 Email Security

To ensure the security of email accounts and sent emails, the STARTTLS protocol is used by default to authenticate the email server and send encrypted emails.

5.3 Web Login Security Protection

Users can log in to the IdeaHub web interface to remotely manage the IdeaHub. The following protection measures are taken to ensure web login security:

- When a user requests access to a specified web page which requires access authorization or submits an HTTPS request, the endpoint checks whether the user's session identifier is valid and whether the user is authorized to perform the operation.
- The server implements the final authentication on the user.
- Before transmitting user-generated data to clients, the server verifies the data and encodes it using HyperText Markup Language (HTML) to prevent malicious code injection and cross-site scripting attacks.
- Web security scan software is used to scan the web server and web apps to prevent security vulnerabilities.

5.4 Protocol Anti-Attack Measures

- The communication matrix is provided in the product documentation. Do not enable the services and ports that are not described in the communication matrix.

The communication matrix contains the following information:

- Open ports

- Transport layer protocols used by the ports
- NEs that use the ports to communicate with peer NEs
- Application layer protocols used by the ports and description of the services at the application layer
- Whether services at the application layer can be disabled
- Authentication modes adopted by the ports
- Port functions (such as data traffic control)
- To ensure the security and stability of the video conferencing system, the endpoint utilizes multiple encryption measures, including H.235 (for encryption of media and signaling streams), SRTP, TLS, and HTTPS.
- Robustness testing tools are used to avoid security vulnerabilities.
- By default, the LDAP over SSL (LDAPS) protocol is used to encrypt the address book, ensuring data integrity and preventing data from being stolen.
- The endpoint supports anti-brute-force-cracking. When the number of authentication failures reaches the preset value, the IP address or account is locked. You can access the endpoint again only when this duration ends.

5.5 Protection of Sensitive Data

- The log, diagnostics, debug, and alarm information do not contain sensitive data such as passwords and ciphering contexts. If sensitive data is included, it is displayed as "****".
- Sensitive data can be transmitted through secure channels or after being encrypted.
- The endpoint checks the complexity of passwords. When a password is being entered, each stroke is displayed as "." or "*", and the entered password cannot be copied.
- Sensitive data such as passwords and encrypted contexts must not be recorded in logs. If sensitive data really needs to be recorded, it should be displayed as "****".
- Only standard encryption algorithms and key negotiation mechanisms are used. Proprietary algorithms are not allowed.

5.6 System Management and Maintenance Security

- Software packages (including patches) are released only after they are scanned by at least three types of mainstream antivirus software and no issues are detected. In special cases, an explanation is provided for alarms.
- All user operations and system exceptions are logged.
- A two-level certificate chain is supported to ensure the transmission security of confidential data.

5.7 Security Design

- Safety labels and tags are attached to the exterior of the product to remind users of avoiding high-risk operations.
- The component security design meets the admission requirements of the EU, China, and other countries and regions.

5.8 DR and Backup

The IdeaHub supports disaster recovery (DR) and backup. When the server device (such as the LDAP server, ACS server, or SC) used with the IdeaHub is faulty, the IdeaHub can switch to the standby device to ensure service continuity.

5.9 Secure Startup

The IdeaHub supports secure startup. During the startup process, the integrity of the U-Boot, kernel, and application software is verified level by level to ensure that all software running on the IdeaHub is valid, thereby ensuring reliable and secure running of the IdeaHub.

5.10 Security Protection for the CloudVC Network

Public and Private Networks

The media latching and standard H.460 traversal technology are used to set up secure video call connections between public and private networks and between private networks through the firewall.

Firewall Technology (NAT)

The firewall protects your IP network by separating the internal and external network communication data. Using the Network Address Translation (NAT) access technology and signaling exchange between public network protocols and private network protocols, the firewall enables zero-distance communication among sites on local area networks (LANs) in different places through video meetings. With NAT, a device on an internal LAN is allocated a dedicated internal IP address that uniquely identifies the device on the LAN, and the device uses an external IP address to communicate with external devices. NAT mapping enables the entire private network to connect to the Internet through only a few IP addresses. Through the firewall-port-based control, the private network is more secure.

Network Layer Security

The IdeaHub on the CloudVC network uses the following network layer security policies to effectively prevent external attacks:

- The IdeaHub, SMC, and MCU are deployed in the trusted zone, isolated from the Demilitarized Zone (DMZ) and the untrusted zone. Furthermore, firewalls are deployed for security domain division and access control.
- The IdeaHub in the untrusted zone communicates with NEs in the trusted zone through the Switch Center (SC) in the DMZ.

Strong Network Adaptability and High Security

- Super Error Concealment (SEC) and Hybrid Automatic Repeat Request (HARQ) retransmission are utilized to deliver clear and smooth service even when the audiovisual packet loss rate reaches 30%.
- Net Automatic Transfer-enhancement (netATE), and Audio Jitter Buffer (AJB) are supported to reduce the packet loss rate and improve audio quality.

- Bandwidth sharing is supported among video and content in a meeting. This feature improves network utilization and delivers smooth HD video images.
- Various encryption measures are taken, such as SRTP, TLS, and HTTPS, ensuring secure and stable running of the video conferencing system.

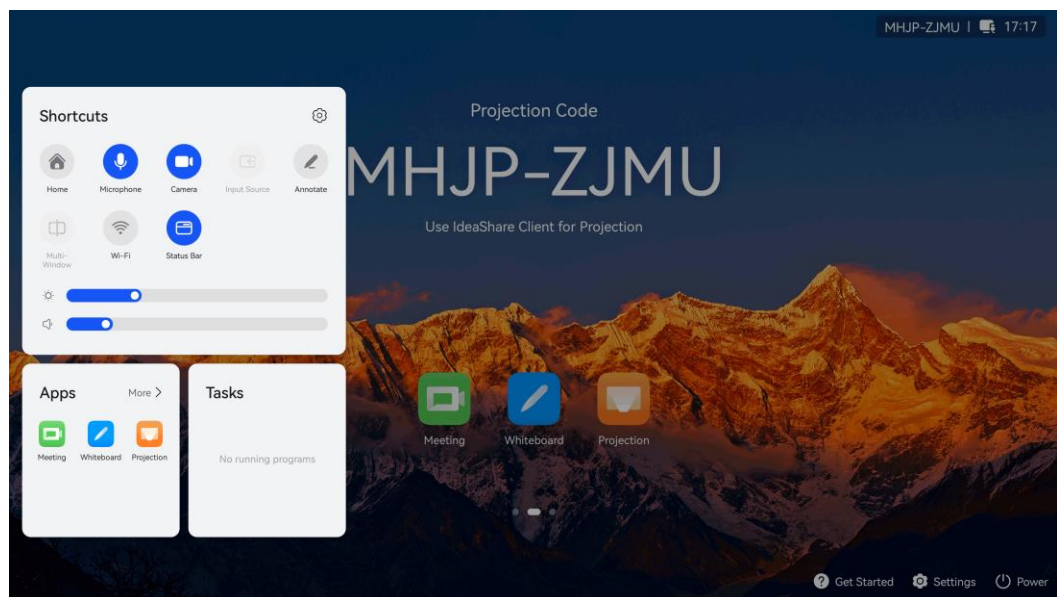
6 Operations and Maintenance

6.1 GUIs

6.1.1 Touchscreen UI

The IdeaHub uses a brand-new touchable collaboration system. You can simply tap icons to perform basic operations, such as to open an app, turn on/off a camera, or adjust the volume.

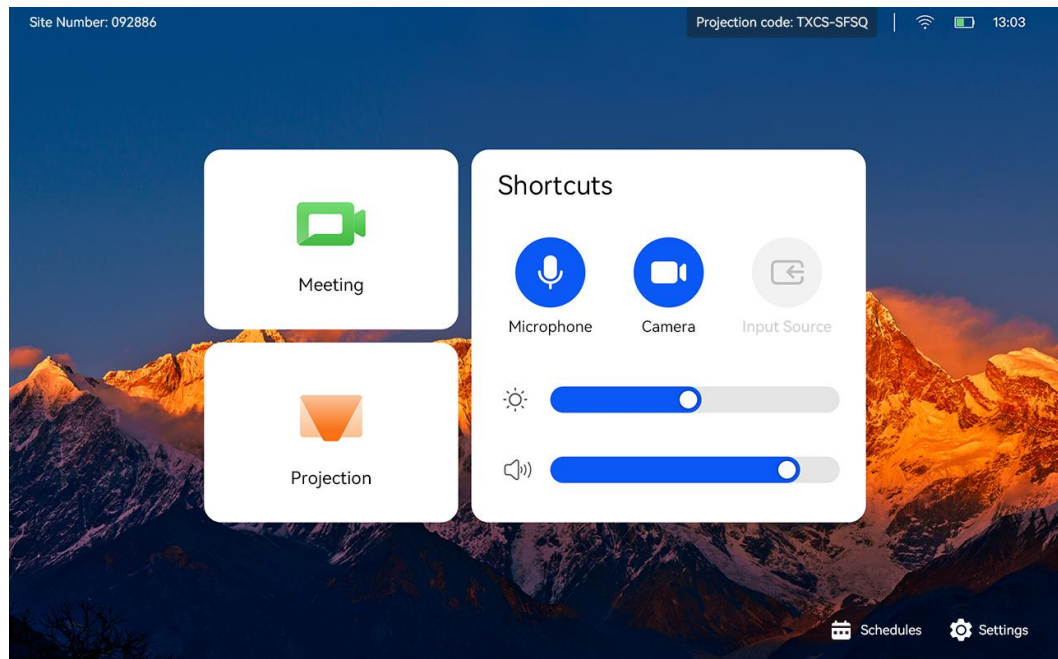
Figure 6-1 Home screen of the touchscreen



6.1.2 Touch UI

The Touch is optional for the IdeaHub and uses a brand-new touchable collaboration system. You can simply tap icons to perform basic operations, such as to open an app, turn on/off a camera, or adjust the volume.

Figure 6-2 Home screen of the Touch UI

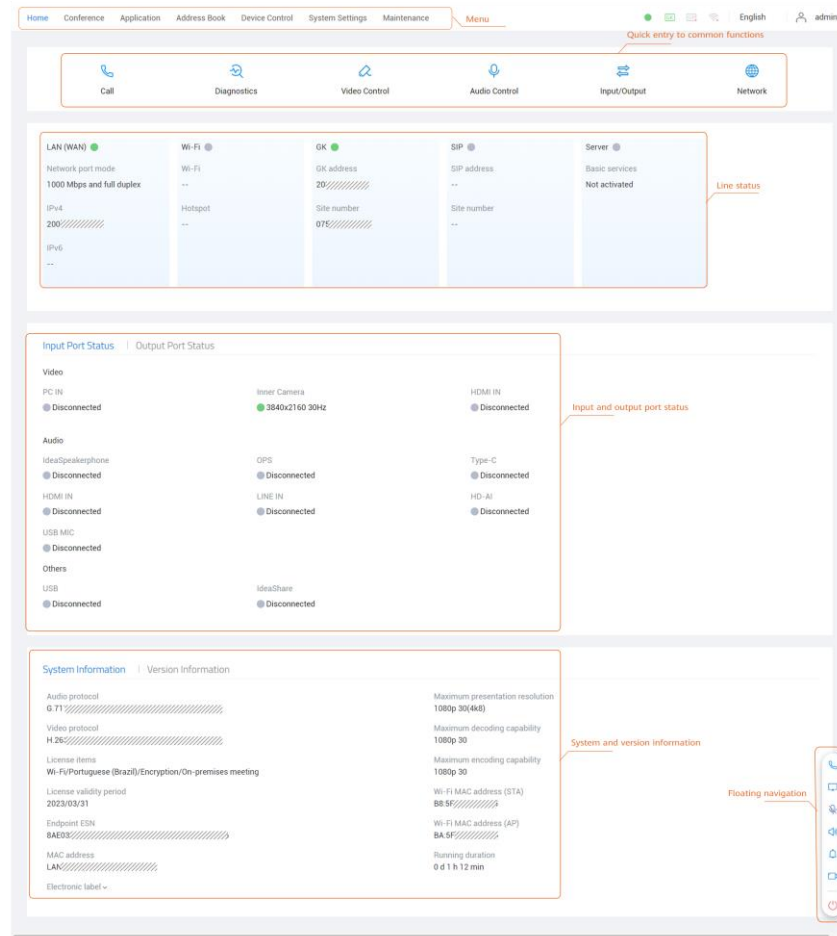


6.1.3 Web Interface

The IdeaHub can be remotely managed by the administrator from the endpoint web interface. The web interface allows simultaneous operations from up to 10 users using the same account. When multiple users log in to the system at the same time, the latest operation of a user takes effect. In addition, the operations of different users can be recorded in logs.

Figure 6-3 shows the basic layout of the web interface, which varies depending on the model or license import.

Figure 6-3 Web interface example



6.1.4 IdeaShare UI

The IdeaShare is a wireless projection client designed for the IdeaHub. It can be installed on an Android/iOS/HarmonyOS mobile device or Windows/macOS computer. A maximum of 20 users can be connected at the same time. When one site is sharing content, other sites can start sharing, but the existing presentation session will automatically stop.

The Android/iOS/HarmonyOS/macOS and Windows IdeaShare wireless projection client integrates the remote control function, allowing users to mute or unmute the microphone, turn on or off the camera, adjust the volume, and end a meeting.

6.2 Maintenance and Upgrade

6.2.1 Log Management

The IdeaHub records logs about user operations and system exceptions, helping the administrator maintain the system and locate faults.

Logs are saved as files. You can view or export logs on the web interface.

6.2.2 Device Diagnostics

The IdeaHub has a built-in IdeaCare app. You can use this app on the touchscreen to perform full diagnostics, quick diagnostics, diagnostics by category, and one-click diagnostics, and export diagnostics reports.

6.2.3 Inspection

The following inspection tasks can be executed on the SMC and SMC2.0 for the IdeaHub:

- Check the status of IP lines.
- Check the system software version.
- Check the system performance, including the temperature status.
- Check the H.323 and SIP registration status.
- Check the content source connection status and input port settings.
- Check the video input cable connection status and video input port settings.
- Report the inspection status and result to the SMC and SMC2.0.

6.2.4 Upgrade

You can upgrade the endpoint to fix vulnerabilities and use new functions. The following upgrade methods are supported:

- Manually upgrade the endpoint on the web interface.
- Upgrade the endpoint by importing the upgrade file from a USB flash drive.
- Upgrade the endpoint in eRecovery mode.
- After the endpoint is connected to the public network, the software version of the endpoint can be automatically updated. You can also manually check for the latest version on the touchscreen and update the software.
- Manually upgrade the endpoint on the SMC interface.
- Manually upgrade the endpoint on the SMC 2.0 interface.

6.2.5 User Experience Improvement Program

The program helps improve products and services to provide better user experience. With your consent, the device collects personal data, including location, network, device, and application information. Before joining this program, you are advised to read its related statement and *Personal Data Description* carefully. After joining this program, you can opt out of the program at any time.

7 Technical Specifications

7.1 Physical Specifications

Table 7-1 Physical specifications

Parameter Name	Content
System	
CPU	8 cores
Memory	8 GB
Storage space	64 GB
AI computing power	4T+2T
Operating system	HarmonyOS is supported. The optional OPS supports Windows 10.
Screen display	
Backlight type	D-LED
Aspect ratio	16:9
Resolution	3840 x 2160
Display area	<ul style="list-style-type: none">65-inch model: 1428.48 mm x 803.52 mm75-inch model: 1649.66 mm x 927.94 mm86-inch model: 1895.04 mm x 1065.96 mm
Pixel distance	<ul style="list-style-type: none">65-inch model: 372.0 μm x 372.0 μm75-inch model: 429.6 μm x 429.6 μm86-inch model: 493.5 μm x 493.5 μm
Refresh rate	60 Hz
Response time	8 ms
Brightness (typical value)	350 nits

Parameter Name	Content
Screen brightness uniformity	$\geq 70\%$
Contrast	1200:1
Viewing angle	$\geq 178^\circ$
Color depth	10 bits (8 bits + FRC)
Hardware-based anti-blue light	Supported
Glass surface treatment	Anti-glare
Screen lamination	Zero-gap bonding
Glass surface hardness	$\geq 7H$
Color gamut	88% NTSC
Screen touch control	
Touch control precision	± 1 mm
Maximum number of touch points	20
Touch control type	Infrared touch control
Touch response time	≤ 10 ms
Automatic screen brightness adjustment	Supported
Maximum screen sensing range	≤ 2 mm
Writing latency	16 ms
Camera	
Lens type	Fixed focal length
Sensor size	1/2.8"
Horizontal field of view	80°
Aperture	F1.8
Video resolution	4K30 (3840 x 2160)
Zoom	2x digital
Vertical angle of view	50°
Lens cap for privacy protection	Supported
TV distortion	$< 2\%$

Parameter Name	Content
Shooting distance	0.5 m to infinity
PTZ adjustment	e-PTZ
Automatic exposure (AE)	Supported
Automatic white balance (AWB)	Supported
Local camera presets	30
Built-in microphone	
Quantity	6
Sampling frequency	48 kHz
Sampling bits	24 bits
Frequency response range	80 Hz to 20 kHz
Sound pickup distance	12 m
Sound pickup angle	180 °
Built-in speaker	
Quantity	2 x (high-frequency speaker + full-frequency speaker)
Total speaker power	2 x 20 W
Sound output mode	Bottom speaker
Frequency response range	100 Hz to 20 kHz
Stereo	Supported
Maximum sound level	95 dB SPL@1 m
Electricity supply requirements	
Rated operating voltage	100–240 V AC
Operating frequency	50 Hz/60 Hz
Maximum power consumption	<ul style="list-style-type: none"> 65-inch model: < 350 W 75-inch model: < 420 W 86-inch model: < 450 W
Typical power (without OPS; brightness of 300 nits)	<ul style="list-style-type: none"> 65-inch model: 175 W 75-inch model: 180 W 86-inch model: 230 W
Standby power	< 0.5 W

Parameter Name	Content
Environmental requirements (in use)	
Ambient temperature	IdeaHub: 0°C to 40°C Touch: 0 °C to 35 °C
Relative humidity	10% to 95%
Operating altitude	≤5000m
Environmental requirements (idle)	
Ambient temperature	–20 °C to +60 °C
Relative humidity (non-condensing)	5% to 95%
Physical parameters of the entire system	
Product dimensions ^[1]	<ul style="list-style-type: none"> 65-inch model: 947.5 mm x 1484.5 mm x 91.6 mm 75-inch model: 1071.9 mm x 1705.7 mm x 91.8 mm 86-inch model: 1212.0 mm x 1953.0 mm x 91.8 mm
Package dimensions	<ul style="list-style-type: none"> 65-inch model: 1050 mm x 1650 mm x 220 mm 75-inch model: 1170 mm x 1900 mm x 220 mm 86-inch model: 1300 mm x 2090 mm x 250 mm
Net weight	<ul style="list-style-type: none"> 65-inch model: 35.5 kg 75-inch model: 47.0 kg 86-inch model: 62.0 kg
Gross weight (including the package)	<ul style="list-style-type: none"> 65-inch model: 43.0 kg 75-inch model: 57.0 kg 86-inch model: 73.5 kg
(Optional) Floor stand	
Product dimensions	1525.0 mm x 1302.0 mm x 764.0 mm
Package dimensions	180 mm x 1390 mm x 845 mm
Net weight	19.5 kg
Gross weight (including the package)	24.8 kg
(Optional) Wall-mounted bracket	
Product dimensions	30 mm x 1170 mm x 210 mm
Package dimensions	86 mm x 1270 mm x 300 mm
Net weight	3.6 kg
Gross weight (including the package)	5.5 kg

Parameter Name	Content
(Mandatory) Stylus pen	
Quantity	2
Wi-Fi	
Wi-Fi protocol	802.11 a/b/g/n/ac/ax
Supported frequency band	<ul style="list-style-type: none"> 2.4 GHz to 2.4835 GHz 5 GHz to 5.85 GHz
Maximum transmit power	<ul style="list-style-type: none"> 2.4 GHz to 2.4835 GHz: < 20 dBm 5 GHz to 5.85 GHz: < 23 dBm
Voice tracking	
Distance	3 m
Installation	
Installation modes	Floor stand-mounted, wall-mounted, or wall-recessed
Peripherals	
Microphone	Two microphone arrays (VPM220 or Mic 500) can be connected.

 **NOTE**

- Dimensions: H x W x D
- [1]: The height of the product includes the height of the camera.

7.2 Performance Specifications

Table 7-2 Performance specifications

Item	Specifications
Call bandwidth	64 kbit/s to 8 Mbit/s
Video capabilities (H.264 BP)	Minimum bandwidth required to deliver video of a specific resolution (without any packet loss): <ul style="list-style-type: none"> 960 kbit/s for 1080p 30 fps 590 kbit/s for 720p 30 fps 224 kbit/s for 4CIF 30 fps 64 kbit/s for CIF 30 fps
Video capabilities (H.264 HP)	Minimum bandwidth required to deliver video of a specific resolution (without any packet loss): <ul style="list-style-type: none"> 423 kbit/s for 1080p 30 fps

Item	Specifications
	<ul style="list-style-type: none"> 302 kbit/s for 720p 30 fps 224 kbit/s for 4CIF 30 fps 64 kbit/s for CIF 30 fps
Video capabilities (H.265)	<p>Minimum bandwidth required to deliver video of a specific resolution (without any packet loss):</p> <ul style="list-style-type: none"> 384 kbit/s for 1080p 30 fps 256 kbit/s for 720p 30 fps 192 kbit/s for 4CIF 30 fps 128 kbit/s for CIF 30 fps
Content sharing capabilities	<ul style="list-style-type: none"> IdeaShare app <ul style="list-style-type: none"> Sharing in a meeting: <ul style="list-style-type: none"> IdeaShare mobile client (Android): up to 1080p 30 fps IdeaShare mobile client (HarmonyOS): up to 1080p 30 fps IdeaShare mobile client (iOS): up to 1080p 30 fps IdeaShare PC client (Windows): up to 4K 30 fps^[1]/1080p 60 fps IdeaShare PC client (macOS): up to 1080p 30 fps Local projection: <ul style="list-style-type: none"> IdeaShare mobile client (Android): up to 1080p 30 fps IdeaShare mobile client (HarmonyOS): up to 1080p 30 fps IdeaShare mobile client (iOS): up to 1080p 30 fps IdeaShare PC client (Windows): up to 4K 30 fps^[2]/1080p 60 fps IdeaShare PC client (macOS): up to 2K 30 fps IdeaShare Key: <ul style="list-style-type: none"> Sharing in a meeting: <ul style="list-style-type: none"> IdeaShare Key (Windows): up to 4K 30 fps^[3]/1080p 60 fps^[4] IdeaShare Key (macOS): up to 1080p 30 fps Local projection: <ul style="list-style-type: none"> IdeaShare Key (Windows): up to 4K 30 fps^[5]/1080p 60 fps^[6] IdeaShare Key (macOS): up to 2K 30 fps HDMI/Type-C projection <p>Input resolution: 640 x 480 60/72/75/85 fps, 800 x 600 56/60/72/75/85 fps, 1024 x 768 60/70/75/85 fps, 1152 x 864 60/75/85 fps, 1280 x 600 60 fps, 1280 x 720 60/75/85 fps, 1280 x 768 60/75/85 fps, 1280 x 800 60/75/85 fps, 1280 x 960 60/75/85 fps, 1280 x 1024 60/75/85 fps, 1360 x 768 60 fps, 1366 x 768 60 fps, 1440 x 900 60 fps, 1400 x 1050 60 fps, 1600 x 900 60 fps, 1600 x 1200 60 fps, 1680 x 1050 60 fps, 1920 x 1080 24/25/30/50/60 fps, 1920 x 1200 60 fps, 3840 x 2160 25/30/50/60 fps</p> <p>Codec resolution: CIF (352 x 288), 640 x 480, 4CIF (704 x 576), 800 x 600, 1024 x 768, 720p (1280 x 720), 1280 x 1024, 448p</p>

Item	Specifications
	<p>(768 x 448), 1080p (1920 x 1080), 1600 x 1200, 1920 x 1200, 1152 x 864, 1280 x 600, 1280 x 768, 1280 x 800, 1280 x 960, 1360 x 768, 1366 x 768, 1440 x 900, 1400 x 1050, 1600 x 900, 1680 x 1050, 2048 x 1152, 2048 x 1236, 2048 x 1536, 2048 x 1556, 2560 x 1440, 2560 x 1600, 2560 x 2048, 2880 x 1620, 2880 x 1800, 3200 x 1800, 4K (3840 x 2160)</p> <p>Output resolution: 1920 x 1080, 3840 x 2160</p>
Dual-stream capabilities	<ul style="list-style-type: none"> After the meeting license is imported, the IdeaHub S2 supports the on-premises meeting function. Supported resolutions include 1080p 30 fps (video) + 1080p 30 fps (presentation), or 1080p 30 fps (video) + 4K 8 fps (presentation).
Operating system and hardware requirements for IdeaShare mobile client installation	<ul style="list-style-type: none"> Android 8.0 or later iOS 13 or later HarmonyOS 2.0 or later
Operating system and hardware requirements for IdeaShare PC client installation	<ul style="list-style-type: none"> Windows 7, 8, 8.1, 10, and 11 (32- and 64-bit) macOS 10.13.6 or later
Operating system version requirements for the IdeaShare client to support Wi-Fi P2P	<ul style="list-style-type: none"> Android 8.0 or later Windows 10.0.10240.0 or later HarmonyOS 2.0 or later
Operating system requirements for DLNA projection devices	<ul style="list-style-type: none"> Android 7.0 or later iOS 9.0 or later HarmonyOS 2.0 or later
Operating system requirements for Cast+ manual projection devices	<ul style="list-style-type: none"> EMUI 10.1.0 or later HarmonyOS 2.0 or later
Operating system requirements for NFC OneHop projection devices	<ul style="list-style-type: none"> EMUI 11.0.0.150 or later HarmonyOS 2.0 or later

NOTE

- The specifications are obtained from lab tests. The actual specifications may vary depending on the environment and devices.
- [1], [2], [3], and [5]: Hardware requirements: Intel Core i7-6600 or later (the first two digits of the version number are greater than 6) and driver version 26.20.100.6861 (April 2019) or later.
- [4] and [6]: The IdeaShare Key (Type-C) supports up to 1080p 60 fps in DP mode.

7.3 Protocol and Standards Compliance

Table 7-3 Protocol and standards compliance

Item	Protocol/Standard
Video encoding and decoding protocols	H.265, H.264 HP, H.264 BP
Audio encoding and decoding protocols	AAC-LD (mono/stereo), G.711A, G.711U, G.722, G.722.1C, G.729A, and Opus
Presentation protocols	H.239 and BFCP
Network transmission protocols	TCP/IP, RTP, DHCP, DNS, SNTP, SSH, HTTP, HTTPS, TR069, 802.1X, and 802.1P/Q
Other communications protocols	H.225, H.235, H.241, H.245, H.460, RFC2833, LDAP, LDAPS, UVC, and UAC
IP protocols	IPv4 and IPv6
Encryption protocols	H.235, TLS, and SRTP encryption
Wi-Fi standards	<ul style="list-style-type: none"> 802.11 a/b/g/n/ac/ax are supported. The AP, STA, and P2P modes can coexist. Wi-Fi supports the following authentication modes: OPEN, SHARE, WPA-PSK, WPA2-PSK, WPA3-Personal, and 802.1x EAP. Wi-Fi supports the following encryption modes: NONE, WEP, TKIP, and AES. The Wi-Fi server supports the following authentication mode: WPA2-PSK. The Wi-Fi server supports the following encryption mode: AES.

7.4 HEVC Authorization

